BUSINESS IN MARYLAND

EDUCATION & RESEARCH

PROFILE

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Maryland's 60 colleges and universities include some of the world's most renowned institutions of higher education. Fueling the translation of research and commercialization they are producing a ready workforce and pushing new discoveries and innovation into the marketplace. The **University System of Maryland,** the state's largest employer, includes 12 institutions and two regional higher education centers. With over 100,000 undergraduates, 40,000 graduates and 12,000 faculty, it is one of the largest in the U.S. **Johns Hopkins University** is first among academic institutions in the nation in research and development expenditures, totaling $1.86 billion in FY 2009.

Proximity to the nation's capital provides strong research partnership opportunities with federal agencies like **NIH, NIST, NSA and the FDA**. Engines for economic growth, the state has 400 federal and academic research centers. In 2009, Maryland's 5,700 research and education related businesses generated $22.5 billion in GDP.

WORKFORCE

First in concentration of doctoral scientists and engineers

Maryland receives over $11.6 billion of federal research obligations annually.

MAJOR EDUCATION & RESEARCH EMPLOYERS

University System of Maryland	35,000
Johns Hopkins University	27,000
National Institutes of Health	17,800
U.S. Food & Drug Administration	7,500
SAIC	4,500
U.S. Census Bureau	4,300
NASA - Goddard Space Flight Center	3,200
Montgomery College	3,000
National Institute of Standards and Technology	2,600
Howard Community College	2,500

MARYLAND'S WORKFORCE PIPELINE

Maryland's workforce pipeline is fueled by one of the nation's most diverse and highly educated concentrations of workers in science and technology occupations. Among the states Maryland is:

- 1st in computer specialists, microbiologists and statisticians
- 2nd in biological scientists, survey researchers and mathematicians
- 3rd in operations research analysts, space scientists and physicists
- 4th in database administrators and aerospace engineers
- 5th in biomedical engineers and computer hardware engineers

ACADEMIC RESEARCH

According to the National Science Foundation, FY 2008 academic R&D expenditures in Maryland totaled $2.75 billion, with $2 billion – 73% from federal government sources. The largest share of Maryland's academic R&D spending is on life sciences ($1.33 billion) followed by engineering ($750 million).

2 of every 3 doctoral scientists and engineers working in higher education are actively engaged in research and discovery as either a primary or secondary work activity

EDUCATION

Best public school system in the nation 2nd straight year

SELECT ACADEMIC RESEARCH FACILITIES

Johns Hopkins University (JHU) – Founded in 1876, JHU was the first university in the Western Hemisphere, based on the European research institution, with a mission both to teach and to advance human knowledge through discovery. Its establishment revolutionized U.S. higher education; today, it remains a world leader in education, research and patient care. The University ranks first among U.S. universities in receipt of federal research and development funds.

JHU Applied Physics Laboratory (APL) – A not-for-profit center for engineering, research, and development located north of Washington, DC, APL is a division of one of the world's premier research universities. APL's primary area of research is national defense and homeland security with more than 600 different research programs that protect our homeland and advance the nation's vision in research and space science. The University has an annual budget of $980 million, and 4,600 employees; 68 percent of them are engineers and scientists.

University of Maryland, Baltimore (UMB) – One of the country's leading public institutions for graduate and professional education with schools of medicine, pharmacy, dentistry, nursing, law and social work. The academic health center conducts $500 million in biomedical research annually and is actively engaged with more than 300 bioscience and pharmaceutical companies around the world in clinical trials, translational research, drug development, and technology commercialization. UMB is home to the rapidly growing University of Maryland BioPark.

University of Maryland, Baltimore County (UMBC) – Ranks second among U.S. universities in NASA-funded research grants and cooperative agreements. The

University's NASA-funded centers are the Joint Center for Earth Systems Technology, the Goddard Earth Sciences and Technology Center and the Center for Space Science and Technology.

University of Maryland, College Park (UMCP) – The University System of Maryland's (USM) flagship institution UMCP is ranked among the nation's top 20 public research universities by *U.S. News & World Report* with 30 academic programs in the top 10. The faculty includes three Nobel Laureates, seven Pulitzer Prize winners, and scores of Fulbright scholars. USM boasts many federal agency partnerships and a host of leading research centers in areas such as food safety, cybersecurity, climate change, nanoscience and engineering.

FEDERAL RESEARCH

More than a dozen federal agencies conduct R&D work in about 70 research centers in Maryland. These centers also award grants and contracts to Maryland businesses for research work and related services.

LEADING FEDERAL RESEARCH FACILITIES

- NASA Goddard Space Flight Center
- National Institutes of Health
- National Institute of Standards and Technology
- Food and Drug Administration
- Aberdeen Proving Ground
- Army Research Laboratory
- Naval Air Warfare Center Aircraft Division

RESEARCH PIONEER

Scientists Build the First Synthetic Life-Form

Further blurring the line between science fiction and science fact, a team of researchers–led by J. Craig Venter, co-mapper of the human genome–has synthesized a bacterial cell from scratch using chemicals and computer data. The breakthrough could lead to new alternative energy sources and vaccines.

Source: Time magazine June 7, 2010

SELECT PRIVATE RESEARCH CENTERS

- **Battelle Eastern Science & Technology Division – Aberdeen**
  Biological and chemical sciences and technology research
- **Biomedical Research Institute – Rockville**
  Emphasis on basic research in schistosomiasis
- **J. Craig Venter Institute – Rockville**
  World leader in genomic research
- **Joint Global Change Research Institute – College Park**
  Develops solutions to global climate change issues
- **Lockheed Martin's NexGen Cyber Innovation and Technology Center – Gaithersburg**
  Cybersecurity research and development facility

- **Southern Research Institute – Frederick**
  Innovative solutions in pharmaceutical sciences, automotive, engineering and environment and energy industries
- **Aerospace Corporation – Columbia/Silver Spring/Suitland**
  Technical and scientific research and development services to national-security space programs since 1960
- **SAIC – Germantown**
  Scientific, engineering, and technology applications company

RESEARCH PARKS

University of Maryland M Square Research Park – 130-acre research park adjacent to the University of Maryland, College Park. M Square is a public and private research, lab and incubator space. Key technology clusters at the park include homeland and national security, environmental and earth sciences, and food safety and food security.

University of Maryland BioPark – Biomedical research park on the academic medical center campus of the University of Maryland, Baltimore. UMB BioPark is a community of life science companies and academic research centers commercializing new drugs, diagnostics and devices and advancing biomedical research.

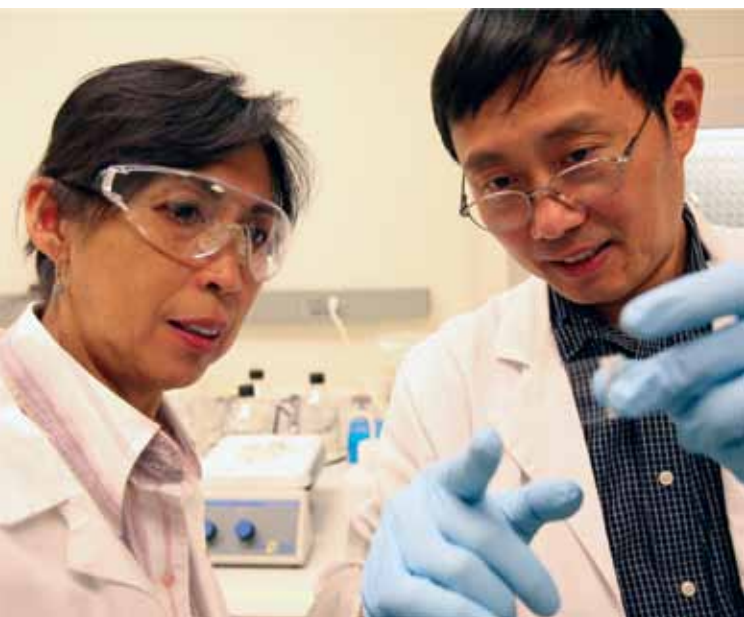
BioPark
UNIVERSITY OF MARYLAND

bwtech@UMBC – Integrated research park, incubator and accelerator at UMBC. Located five minutes from BWI Airport, bwtech@UMBC is home to nearly 50 companies and the UMBC ACTiVATE® Program, a systematic model for increasing technology commercialization from research institutions.

FlexEl, LLC a company in the Mtech Technology Advancement Program incubator developing rechargeable, flexible, thin-film batteries, was named company of the year in the technology transfer category at the 2010 Maryland Incubator Company of the Year Awards.

PROFILE

Laureate International Universities (LIU) – An international non-government organization, headquartered in Baltimore, LIU is a global network of more than 50 accredited campus-based and online institutions of higher education offering undergraduate and graduate degree programs to more than 550,000 students around the world. LIU spans 21 countries and offers more than 130 degree programs. Laureate Education supports more than 100 nonprofit organizations through the Sylvan/Laureate Foundation and through its partnership with the Clinton Global Initiative provides scholarships internationally. In April 2010, President Bill Clinton became honorary chancellor of LIU.



DID YOU KNOW?

- Maryland ranks fourth nationally in total R&D expenditures at universities and colleges
- UMBC is among the top three research universities in the U.S. in the production of IT degrees at the undergraduate, master's, and Ph.D. levels, according to the National Science Foundation

- Morgan State University ranks 3rd in the nation in the number of undergraduate engineering degrees awarded to African Americans
- In 2006, 136 patents were awarded to Maryland academic institutions, or 17.9 per 1,000 doctoral scientists and engineers, compared to the national average of 11.6
- Maryland bioscience companies employ approximately 30,000 skilled workers with a similar number of bioscience related workers in federal and academic sectors
- Google co-founder Sergey Brin is a University of Maryland alumnus
- Maryland's average annual Federal Small Business Innovation Research funding per $1 million of GDP from 2006-2008 was $292 compared to the U.S. average of $127
- UMBC's chemical and biochemical engineering department is ranked first in the nation in percentage of women faculty
- Johns Hopkins University used the first functional MRI images of artists' brains performing jazz improvisation to study the neurological underpinnings of creativity and spontaneity

STABILITY

AAA Bond Rating certified by Moody's, Fitch and Standard & Poor's

INCENTIVES

Maryland has a wide array of incentives, including workforce training grants, loans and twenty-nine Enterprise Zones that provide income and real property tax credits in return for job creation and investments. Select funding, technology transfer and technical assistance programs include:

Maryland Biotechnology Investment Incentive Tax Credit
Provides income tax credits equal to 50% of an eligible investment for investors in qualified Maryland biotechnology companies. This tax credit program offers incentives for investment in seed and early stage biotech companies, up to $250,000.

Maryland Technology Development Corporation
A Maryland Proof of Concept Center that moves innovations and capabilities of academic and federal labs into the state's economy by facilitating the transfer of technology between the private sector and the labs. This is accomplished in part by providing emerging technology companies and university researchers with vital seed funding, specialized technical assistance and entrepreneurial support programs. For additional information go to marylandtedco.org

- **TechStart** - Funds university or federal lab-based teams to determine whether technologies have the potential to be commercialized through a startup company. Proposals are capped at $15,000 per entrepreneurial enquiry.
- **Maryland Technology Transfer & Commercialization Fund** - Provides funding for Maryland technology companies located in approved incubators in the State of Maryland or who wish to develop technology-based products and/or services in collaboration with the universities in Maryland and/or federal labs. Funds up to $75,000 are available.

- **TEDCO** – Johnson & Johnson Joint Investment Program – Jointly funded award program invests in seed stage companies with technologies of interest to Johnson & Johnson's Corporate Office of Science & Technology. Award limits vary from $75,000 - $150,000.
- **Various Federal Technology Transfer Initiatives** – Grants for technology collaborations that meet the mission needs of a federal lab or institution. Check with TEDCO on a regular basis. Maximum awards vary.
- **University Technology Development Fund (UTDF)** – Funding to Maryland academic institutions to support pre-commercial research on university intellectual property to increase the likelihood of commercialization. UTDF grants are usually limited to $50,000.

Maryland Venture Fund

State-funded seed and early-stage equity fund that makes direct investments in technology and indirect investments in venture capital funds. 60 percent is invested in technology companies for software, communications and IT security.

- **Challenge Investment Program** – Provides financing for seed-stage companies to cover a portion of the initial costs associated with bringing new products to market. **Maximum investment of $150,000**.
  - No more than 25 employees and annual sales of less than $1 million
  - Minimum 1:1 co-investor match
  - Located in Maryland and remain in the state for 3 years

MARYLAND DEPARTMENT OF BUSINESS & ECONOMIC DEVELOPMENT

Looking to start, expand or relocate a business? Our staff helps business owners of all sizes and sectors leverage resources, forge relationships and access industry specialists. The Department is your resource for economic, labor, licensing information and financial incentives.

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- Finance programs, tax credits and training grants
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